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The Effects of Using Computer-Assisted Learning to Teach Multiplication

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Abstract

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The Effects of Using Computer-Assisted Learning to Teach Multiplication

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Abstract

This case study investigated the effects of using computer-assisted learning (CAL) while teaching multiplication facts to 32 third-graders. This quasi-experimental study spanned a six-week period and was analyzed using a variety of qualitative and quantitative techniques. Among these qualitative techniques were participant observation and formal and informal interviews. The quantitative component included document analysis of three separate instruments.

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Introduction

One of the main concepts taught in third grade mathematics is multiplication. Traditionally, students progressing through the facts at different speeds created pacing problems among students and the teacher. Some students progressed quickly through certain facts while others took a considerable amount of time getting through the same set of facts. Students also seem to learn better if they are corrected early in the learning process.

This situation initiated some questions for the researcher about the effectiveness of how multiplication was being taught. The present study examined the use of the computer and the process of providing immediate feedback. Based on the ability of the students, this study investigated the effectiveness of student learning based on instruction that used the computer to support different speeds of learning.

As a component of the study, a web site was developed to incorporate different learning styles and speeds. The research addressed the effectiveness of the site. This researcher was also interested in determining if the added CAL component would benefit learners with differing learning styles and motivations.

This study addressed the problem of developing a method of instruction for learning multiplication that would meet the varied needs of third grade students. This case study investigated the effects of using CAL while teaching multiplication facts to 32 third-graders.

Methodology

Subjects

The subjects were 32 third graders from an elementary school. The town is a small, rural community in northeast Iowa. Most students came from a middle socioeconomic status. There were approximately 200 students at the area elementary school. There were 16 students enrolled in each section of third grade this case study.

Instruments

Data was collected over a six-week period and analyzed using a variety of qualitative and quantitative techniques. Among these techniques were participant observation, document analysis, and formal and informal interviews. Interviews and observations were taken throughout the duration of the treatment process.

The timed multiplication test (Appendix A) was used to assess the performance of solving various multiplication facts from 0-9. This two-minute timed test was produced by Thinking With Numbers Inc. The number of problems students were able to answer correctly in the timed period was their measured score. Reliability was established through the history and validity this test has established over time.

. The Methods of Solving Multiplication (Appendix B) was created by this researcher and used to assess the process that students used when solving multiplication problems. This assessment was given to both groups as a pre-test. The same test was then given as a post-test after experiencing traditional or CAL instruction. The results were compared to identify differences between the interventions. There were four items on the evaluation. Each response was categorized by the type of thinking used to solve each problem. Categories were established after finding similar trends in responses.

The Attitude Towards CAL Scale (Askar, Yavuz, & Koksal, 1992) was used to assess the students' attitudes and perceptions of the treatment group (Appendix C). The scale consisted of ten items. Points were given based on each response. Each "Yes" response was scored with three points, "Sometimes" was given two points, and each "No" response was scored a single point. Two questions were negatively written, so their values were reversed for purposes of scoring. This evaluation was picked because of a strong alpha reliability score of 0.81 when implemented in a previous study (Askar et al., 1992).

Research design and procedures

A case study methodology using a quasi-experimental design was used in this study with two third-grade classrooms. Both teachers were mid-career elementary teachers. Data was collected using a variety of techniques including participant and non-participant observations, formal and informal interviews, and document analysis.

At the beginning of the treatment, the Methods of Solving Multiplication and a multiplication-timed test were administered to collect base-line data. Interviews with students and other teachers were conducted during the duration of this study. Upon conclusion of the study, the exact same assessments were given that were administered as a pretest. At the conclusion of the unit, the treatment group also received the Attitude Towards CAL Scale survey which measured attitudes and perceptions related to computer use in learning and instruction.

A large amount of planning and consideration was used in scheduling the case study. Activities and concepts were taught as similarly as possible. Throughout the time of the study, the instructors spent time each morning coordinating details and establishing expectations of the lesson taught. Appendix D charts the instructional time differences between the two groups.

Statistical Analysis

After the collection of data, the researcher used Microsoft Excel to analyze the data. The areas of interest were the means of both groups within the study and a correlated t-test was calculated for the multiplication-timed test post-tests. The t-test was used in this study to test for a significant difference between the two means.

Review

The literature reviewed for this research fell into four categories. The first area of research focused on the web site development. The second category focused on CAL, and the last two areas dealt with student attitudes and perceptions related to computer use and student achievement.

Web Site Development

In developing the research-related Candy Products web site (http://www.jasonweimer.com/candyproducts/index.htm), effort was spent on researching the proper design for developing an effective learning tool. Research on the use of computerized feedback as it relates to student learning was also considered while structuring a more interactive site for the students. Other web site characteristics, like the use of animation, were also researched. Lastly, literature on best practice integration of technology into the curriculum was reviewed.

Williams and Tollett (2000) established four proper design principles that were followed while designing the web site. They are repetition, proximity, alignment, and contrast. Repetition was established within the site by using the same theme throughout and also similar backgrounds, color schemes, and navigation buttons. Proximity was used when designing the pages and navigation buttons. Alignment and contrast were key to establishing organization on each page, and it also created a page that was visually appealing.

Feedback is a critical component of instruction and learning. With feedback, studies have shown significant gains in post test scores (Azevedo & Bernard, 1995). Appropriate feedback has also helped extend children's attention span (Clements & Swaminathan, 1995).

When there were excessive delays between students' performance and teachers' intervening feedback, it caused a loss of reference for the student. This lapse in time often led to the loss of a teachable moment (King & Behnke, 1999). By allowing student performance to continue uncorrected, the instructor allowed the student to rehearse the incorrect behaviors. Students should receive feedback in the form and at the time that produces the most positive instructional outcomes (King & Behnke, 1999). Johnson and Johnson (1993) suggested that immediate post-performance feedback allowed students to revise and improve learning while interest was still high and while they were still focused on the work at hand.

Animation was incorporated into the design of the web site. Many studies supported the use of animation because of its ability to motivate students and contribute to the content (Milheim, 1993). Some of the motivational factors came from the children's preference to learn with programs that had colorful graphics and animation (Askar et al., 1992).

Animation was an important component that the researcher wanted to incorporate into the web site. Guidelines on the proper use of animation were needed to best utilize this media. Milheim (1993) established some guidelines for the design and use of animation.

1. Simpler animation should be developed instead of complicated animation.

2. Animation should be developed so that important information is easy to perceive.

3. Animation should be used that relates directly to important goals or features within a lesson.

4. Animation should be used when the instruction requires visualization, particularly with spatially-oriented information.

5. The overuse of animation can also make the site distracting.

With these guidelines in mind, simple animation was incorporated to add visualization of the multiplication concept and interest to the web site.

Clements and Swaminathan (1993) and Haugland (2000a) suggested that to facilitate learning developmentally appropriate software should be chosen carefully to match instructional goals. Clements also suggested that actions and graphics within software should provide a meaningful context for children. Children should be in control, and children should be able to see the results of their efforts.

How computers are used with young children is more important than if computers are used at all (Haugland, 2000a). An introduction to the software is important. Muchasic (2000) stated that an adult should demonstrate the activity options with the software and help the children visualize the different options. He went on to say that providing support during exploration, personalizing the computer software, and providing off-computer activity to reinforce learning creates the ideal learning situation. Other research supported that computer activities yield the best results when coupled with suitable off-computer activities (Clements & Swaminathan, 1995).

CAL Environment

After this researcher established a solid foundation for the development of the web site, literature was reviewed on proper integration of technology in a CAL environment. Representative case studies were included for specific examples of integration and achievement

Draper (1998) and Haugland (2000a) both echoed the same perspective on technology integration driven by the instructional needs of the teacher. These researchers suggested that designers should take a specific teaching and learning situation, identify the main limitations or barriers in the current method, and design a solution. An educationally successful approach to solutions and integration of technology is instruction led.

CAL instruction has features that are appealing to both students and teachers. The most important features of a well-designed CAL for students is that it can be self-paced and interactive (Chang, 2000). CAL has had an impact on changing teaching practice. Teachers play more of a facilitating role instead of being the gateway to knowledge. The switch to learning along side the students can be difficult for some teachers to accept, but research shows that teachers have a very positive attitude when teaching this way (Schacter, 1999).

Attitudes and Achievement Regarding CAL

The third area of literature reviewed consisted of the attitudes and achievement of students using CAL environments. Representative studies were included in this section as well for specific examples. The attitude instrument used in this study was adopted from an article by Askar and associates (1992). The last step in the study involved measuring possible attitude changes in relation to using computers with learning and instruction.

One study done by Macnab and Fitzsimmons (1999) is representative of the changes that CAL can cause in teacher attitudes towards teaching in general and using computers while teaching. The Learning Equation (TLE) was a program developed in partnership with the Canadian western provinces as a mathematics resource. TLE was designed to improve student performance and retention of expected mathematics outcomes in secondary school students. The study included 1,184 students in 14 schools in Alberta and British Columbia. The school administrators volunteered for this study to look at student achievement.

A large number of teachers (75%) thought that TLE was effective. Almost all (92%) of TLE teachers thought that students' time on task had increased. In the end, the teachers showed an overall positive attitude toward TLE material. The study suggested that the success was caused by a teacher perspective shift within the classroom. This shift was represented by smaller groups instead of large group instruction, a shift from lecturing to facilitating, and a shift from teacher-managed learners to self-engaged learners.

Johnston (1987) stated that student attitudes are very important to the success or failure of educational approaches and media. A negative reaction will hinder learning where a positive one will make students more receptive to the learning activity. CAL has a positive impact on student attitudes (Schacter, 1999; Kulik, 1983; Macnab & Fitzsimmons, 1999; Clements & Swaminathan, 1995; Heywood & Norman, 1988; Johnston 1987).

Most of the studies showed that there was a positive effect on students who use computer-based instruction. Students also learned lessons more quickly using CAL. Students who used CAL liked their classes more than those who didn't. Students developed a more positive attitude toward computers when they used CAL during class time (Kulik & Kulik, 1987).

Students perceived that they were more interested in content when using computers. They felt that they understood the material presented better and were more eager to study when they used computers. Students also reported that both their attention levels and success rates increased. An interesting finding was that students also felt less embarrassment during class when they used the computers (Askar et al., 1992).

A case study that was representative of this data included 137 fifth grade students who were from two elementary schools studying science for a one month period. CAL was used with one class, and the other class had traditional instruction. The focus of the study was on perceptions and attitudes toward computers and did not take into consideration the academic growth during the month's duration. After the treatment, surveys were given to self-assess the attitudes and perceptions toward the use of technology with the treatment group. Children had a very positive attitude towards learning with and from computers. Students believed that their self-confidence and success were increased when using the computers. Students stated that learning from computers was both interesting and enjoyable (Askar et al., 1992).

Student Achievement Using CAL

TLE was also very effective in its effect on student achievement. TLE students scored significantly higher on the Math Achievement Test than did non-TLE students (Macnab & Fitzsimmons, 1999). The results of this study are also consistent with other research and meta-analyses studies which looked at the efficiency of CAL in a wide variety of grade levels and subjects (Chang, 2000; Lazarowitz & Huppert, 1993; Kulik & Kulik, 1987; Draper, 1998, Kulik, 1983, Haugland, 2000b).

Another specific case study that represented student achievement had 181 students who were assigned randomly into five tenth-grade science classes. Half of the students received CAL opportunities, and the other students received the traditional instruction. The treatment group covered the same material as the control group over a three-week period. The treatment group used CAL software in addition to the laboratory setting. The control group was instructed in a traditional classroom-laboratory setting. The mean scores of the students in the experimental group were significantly higher than the control group (Lazarowitz & Huppert, 1993).

Although many studies have found similar results to the ones shared in this literature review, not all of the studies researching CAL have reached the same positive conclusion. There seems to be some general trends within the research, however. The trends of the benefits of computers were more prevalent in studies that have a shorter duration than in longer ones (Kulik & Kulik, 1987).

Results

Time Distribution

Appendix D reflects that a total of 45 to 60 minutes was spent in each group with mathematics each day. In addition to the classroom instruction, the treatment group spent at least 60 minutes a week using CAL. Each time spent with the computers ranged between 10 and 30 minutes. The control group did not use the computers with mathematics, but their time was spent doing alternate activities related to multiplication concepts and basic recall. The total time for instruction only differed by 20 minutes at the end of the study.

Fluency of facts

The first focus area of this case study was student achievement related to recall abilities of multiplication facts zero through nine. The results of the pre-tests and post-tests are summarized on Table 1. The t-test revealed a 0.34 significance level on the post-test comparison, which was not statistically significant. The treatment group did increase their learning more than the traditional group, but the difference between the mean scores was not practically significant.

The standard deviation for the treatment group revealed some interesting findings. The treatment group's standard deviation went from a 6.87 on the pretest to 9.35 on the post-test. This reveals a greater disbursement of test scores after the treatment than prior to participating in the CAL environment. Some students reacted positively to this instructional style, while other students did not react well to this type of instructional strategy.

Table 1

Pretest & Posttest for Multiplication Time Test

	Mean	Median	Mode	SD
Treatment Pretest	17.56	18	13	6.87
Treatment Posttest	36.44	36.5	47	9.35
Traditional Pretest	15.20	14	22	9.08
Traditional Posttest	33.73	35	27	9.04

Note. t-test = 0.34

Multiplication thinking

The second focus area for this case study was the development of the multiplication concept. Table 2 shows the results of the Methods of Solving Multiplication. Students in both classes during the pre-test relied primarily on repeat addition for finding their answers. The second most common strategy demonstrated on the pre-test represented a visual representation of multiplication using arrays and Marilyn Burns' Circles and Stars (1991). Both classes had a response of not knowing how to solve the problem about ten percent of the time.

The post-tests showed some differences between the classes. The traditional class still relied heavily (47%) on using repeat addition for solving multiplication. The treatment group had a balanced approach to thinking about multiplication using three different strategies. They used repeat addition 30% of the time. One third of the time, the treatment group also used alternative strategies that were discussed in the classroom and on the web site. The treatment group also used different groupings of addition, 30% of the time. Both classes still had five percent of the post-test responses that stated they did not know the correct response.

Table 2

Percentage of Responses to the Methods of Solving Multiplication Test.

	Control Group Pretest	Treatment Group Pretest	Control Group Posttest	Treatment Group Posttest
Using repeated addition	57.8	48.4	46.7	30
Arrays	-	25	-	-
Circles and Stars	14.1	1.6	-	1.6
Don't Know	9.4	10.9	5	5
Alternative Strategies (fingers, Clock, etc)	3.1	6.3	20	33.3
Different Groupings of Addition	6.3	4.5	28.3	30
Using Logical Story Problems	-	3.1	-	-
Just Knew It	3.1	-	-	-

Observations while students worked with the web site (during and after) also revealed other thinking than repeat addition. Students verbally discussed alternate ways of solving problems while using technology. Students explained the thinking of splitting one of the factors into parts they knew how to figure. For example, one student discussed taking a seven and splitting it into a five and a two. These were numbers he could manage more easily. Many of the students in the treatment group used arrays to help visualize problems on the pretest, however there were no students in the treatment or control group who used arrays during the post-test.

Attitudes

The last focus area for this case study concerned the effect of the CAL on motivation and enthusiasm. The results of this self-assessed survey are shown on Table 3. The results of this survey, observations, and informal and formal interviews indicate a strong relationship between the use of computers, motivation, and enthusiasm. Most students (93%) felt that they learned better and easier using the computer. The CAL also made all the students feel more confident, but not consistently in all situations (item 5). Most of the class (93%) felt the CAL increased their perception of success made them eager to learn more (items 4 & 6). Most of the students (93%) felt that time passed quickly (item 1), learning was quicker (item 2), and all students' learning was more enjoyable (item 8 & 3). Seven percent felt bored using the computer after using it for a period of time (item 7), and 20% did not want all their classes taught using the computer (item 9).

Interviews with students supported the information obtained on the survey. The students stated they wanted more time working on the computers and time passed quickly when using the computers. They enjoyed working at their own pace and felt successful and confident while completing different sections on the computer.

Table 3

Percentage of Responses to the Attitude Towards CAL Scale.

Statement	Response		
	Yes	Sometimes	No
1. While working with computers, the time passes quickly.	26	67	7
2. I learn quickly while studying with computers.	60	33	7
3. I feel uncomfortable while studying with computers.	0	13	87
4. Learning with computers increases my success.	60	33	7
5. Learning from computers increases my confidence.	47	53	0
6. Computers make me eager to study more.	67	26	7
7. At first, learning with computers seems enjoyable, but later I am bored.	7	40	53
8. Instruction with computers is very enjoyable.	67	33	0
9. I would like to learn all the courses with computers.	20	67	13
10. I learn with colorful pictures and animation.	80	13	7

Note. Mean = 25.07, SD = 2.14, Max.Score = 28, N=16

Statistical analysis

A statistical significance was not found using the t-test on the data between pre- and post-tests analyzing recall of multiplication facts (see Table 1). The number of subjects within this study was something to keep in mind. With only n=32, any significance one way or the other should be noted, but additional research needs to be done to gain validity.

Significance was found with the methods used to solve multiplication problems and attitudes towards computers. Triangulation was used between data collected from tests and the survey, observations of students and teachers, and interviews with students and teachers. All sources of information revealed an increased enthusiasm and motivation toward using computers with learning. All areas also revealed an increased and diverse understanding of the concept of multiplication.

Discussion

Conclusions

The null hypothesis states that there is no difference between traditional and CAL instruction of multiplication concepts, basic recall of facts, and attitudes towards computers. The researcher failed to disprove the null hypothesis with basic recall of facts, but when comparing students' attitudes towards computers, a significant difference was measured.

Based on the t-test in the treatment group, they did not show growth in all areas. There was little evidence that significant gain in recall of basic multiplication facts increased with computer use. Students went through the web site faster than expected. This researcher was expecting that time spent using the web site to support learning would average about 20 minutes each time on the computer. Observation and interviews with the students revealed that time spent using the web site was closer to 10 or 15 minutes. The students used the site properly, but they wanted more examples and practice problems.

The CAL had a positive effect on students' attitudes toward computers. This was evident through observations, interviews, and data from this study. It also reinforces other previous studies (Azevedo & Bernard, 1995; Askar et al., 1992). The researcher believes positive student attitudes can be related to a couple of factors. Computers enabled the students to self pace their learning. Chang (2000) also found student attitudes affected positively with CAL. The web site enabled the students to get immediate feedback. This was evident while students were working with the web site. King and Behnke (1996) and Johnson and Johnson (1993) also found similar results.

Survey results, interviews, and observations indicated that students were enthusiastic to work with the computers and the web site. They were excited about the various activities they were able to do on the computer, and the computer also became a useful vehicle to relate content that originated in the classroom. Students got very excited when a concept that was introduced or reinforced on the computer connected to a classroom activity. This was expected when designing the web site for the students in the treatment group. Haugland (2000a) and Clements and Swaminathan (1995) also found benefits in connecting computer activities to activities within the classroom.

Interesting movement of student strategies for solving and working multiplication problems were discovered (see Table 2). There were many students who used repeat addition on the pre-test that ended up using other strategies on the post-test. Some of the students who used repeat addition moved to other groupings of addition and others used alternative strategies talked about in class and reinforced using the web site. This researcher believes that the supplemental work using the web site contributed to the progression of students' thinking toward other ways of solving multiplication problems other than repeat addition.

Another interesting movement of student thinking was with the use of arrays to solve problems. With the pre-test, the treatment group had 25% of the class using arrays when solving multiplication, and during the post-test, there were no students who used arrays. One interpretation of this data is that during the use of the web site, which heavily uses arrays in visualizing problems, students moved from the concrete thinking of arrays to a more abstract use of number groupings to solve the multiplication problems.

A final area of the study that was the most unexpected involved the enthusiasm that the CAL environment provided for the teacher of the treatment group. These results correlate with the study done by Macnab and Fitzsimmons (1999). It was encouraging and gratifying to the teacher to see the students engaged and learning during and after math lessons. The CAL environment also gave the teacher and students a break from some of the repetitive activities and routines done in the classroom throughout the unit.

Recommendations

There were some clear recommendations that can be made about the use of technology with students from this study. Computers can have positive effects on student learning. It is important to remember that even though computers are powerful tools, they are not the answer to every situation or a miracle cure. Computers can be even more effective when linked to activities off the computer. Finally, proper integration of computers has a positive effect not only on students but also on teacher attitudes.

There are also recommendations that an expanded web site would provide more activities to induce a greater positive effect on speed and accuracy. This concern came up during both the researcher's observations and interviews with the students. More investigations of correlations between learning styles and CAL need to be made. The computer has unlimited possibilities to provide an ideal learning environment based on the student's particular learning style.

Summary

This study examined the integration of CAL with multiplication and its effects on development of the multiplication concept, motivation and enthusiasm, and the recall abilities of third grade students. The results from this study answered some of these questions. Further study needs to be done concerning the effectiveness of CAL in developing the recall of basic facts. This study produced a low relationship between the use of an instructional web site and recall skills.

Other areas of the study produced more conclusive results. Students demonstrated and expressed a comfort and enthusiasm in working with the computer. In addition to the excitement, students felt significantly more confident and successful using the computer. In helping to develop the multiplication concept, there was evidence that the use of this CAL environment created a more balanced perspective on solving different multiplication problems. The traditional group relied heavily on repeat addition, which was similar to how they solved problems at the beginning of the unit.

All benefits were not limited to the students. For the teacher, instruction was more varied with the addition of the CAL environment. The instructor also found this type of learning more enjoyable and effective. There is still more research that needs to be done with this issue, but research shows trends that reinforce the effectiveness of CAL on student attitudes.

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Appendix A

Survey of All Multiplication Facts- Vertical Form A

Give this two minute timed test about once every two months to monitor growth. Record the number of correct responses to the test.

Name ______________________ Date ________________________

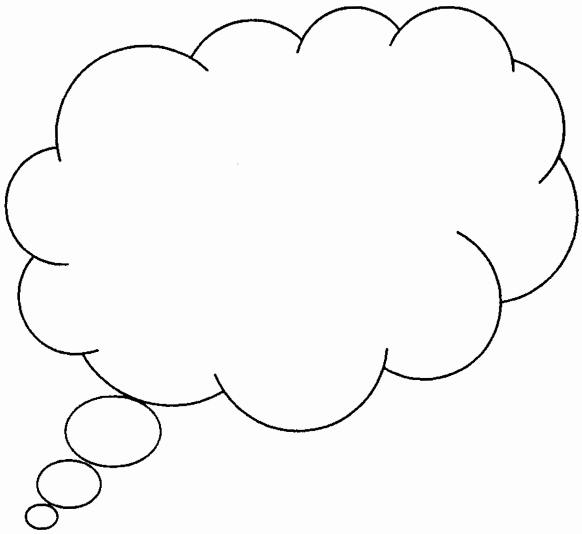
Work the problems across each row. Do as many as you can. You probably will not have time to compete this page.

0	7	3	9	9	8	4	1
x 7	x 2	x 3	x 0	x 7	x 3	x 5	x 5
5	4	3	4	8	2	3	9
x 1	x 8	x 1	x 6	x 1	x 8	x 2	x 1
4	2	9	2	8	4	0	1
x 2	x 6	x 8	x 0	x 2	x 1	x 9	x 7
7	8	9	4	9	6	5	0
x 5	x 5	x 7	x 7	x 3	x 7	x 4	x 8
7	3	8	5	4	9	8	7
x 0	x 6	x 3	x 7	x 6	x 9	x 2	x 9
2	6	8	7	4	1	1	6
x 5	x 5	x 6	x 4	x 8	x 7	x 1	x 8

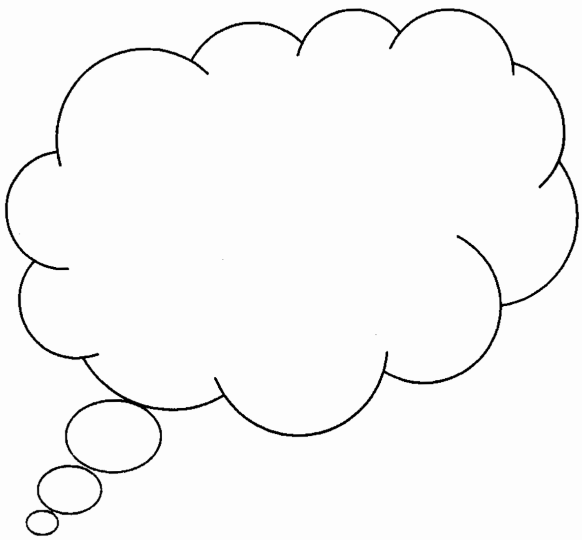
Appendix B

Methods of Solving Multiplication

Look at the problem and then inside the bubble, show or tell what you are thinking. How did you solve this problem?



$$\begin{array}{r} 9 \\ \underline{\times\ 5} \end{array}$$

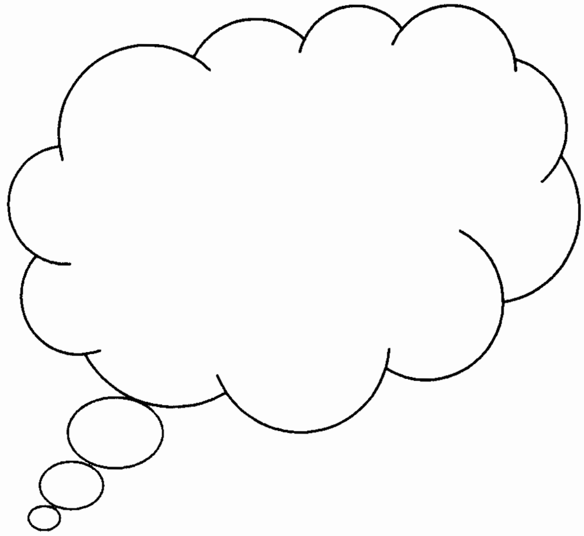


$$\begin{array}{r} 3 \\ \underline{\times\ 8} \end{array}$$

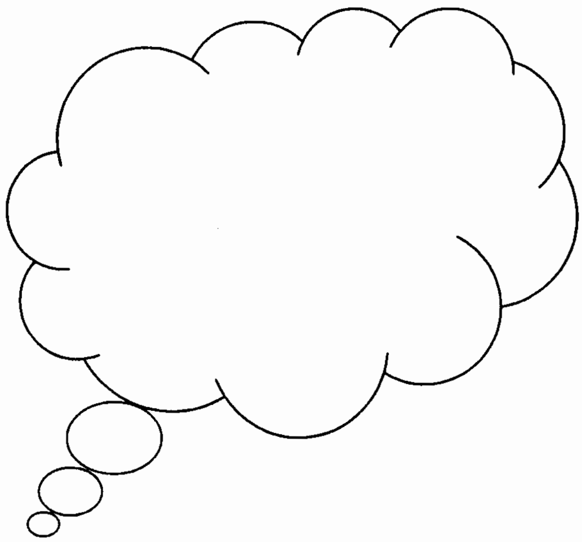
Appendix B

Methods of Solving Multiplication (continued)

4
<u>x 6</u>



9
<u>x 8</u>



Appendix C

Attitude Towards CAL Scale

Read each statement, and circle the response that best describes how you feel about it. Computer time should be thought of as time spent on Candy Products and Math Blaster in the lab while working on multiplication.

Statement	Response		
1. While working with computers the time passes quickly.	Yes	Sometimes	No
2. I learn quickly while studying with computers.	Yes	Sometimes	No
3. I feel uncomfortable while studying with computers.	Yes	Sometimes	No
4. Learning with computers increases my success.	Yes	Sometimes	No
5. Learning from computers increases my confidence.	Yes	Sometimes	No
6. Computers make me eager to study more.	Yes	Sometimes	No
7. At first, learning with computers seems enjoyable, but later I am bored.	Yes	Sometimes	No
8. Instruction with computers is very enjoyable.	Yes	Sometimes	No
9. I would like to learn all the courses with computers.	Yes	Sometimes	No
10. I learn easy with colorful pictures and animation.	Yes	Sometimes	No

Appendix D

Distribution of Instructional Time

Date	Control Group Instructional Time on Multiplication	Treatment Group Instructional Time on Multiplication	Computer Time
Jan. 21	45	45	-
Jan. 22	50	45	20
Jan. 23	50	55	30
Jan. 24	45	45	-
Jan. 25	55	40	20
Jan. 28	45	45	10
Jan. 29	45	50	20
Jan. 30	50	50	-
Jan. 31	50	55	20
Feb. 1	45	40	-
Feb. 4	50	60	20
Feb. 5	50	50	15
Feb. 6	55	55	20
Feb. 7	50	45	15
Feb. 8	45	40	10
Feb. 11	60	60	-
Feb. 12	55	50	10
Feb. 13	50	55	-

Feb. 14	50	50	20
Feb. 15	No school	No school	-
Feb. 18	45	50	20
Feb. 19	25- Conferences	15- Conferences	15
Feb. 20	10- Conferences	20- Conferences	-
Feb. 21	50	50	10
Feb. 22	No school	No school	-
Feb. 25	45	50	20
Feb. 26	45	45	15
Feb. 27	45	45	-
Feb. 28	50	50	20
Mar. 1	55	50	10
Mar. 4	55	50	-
Mar. 5	60	55	20
Mar. 6	45	50	15
Mar. 7	45	45	10
Mar. 8	55	45	-
Totals	1575	1555	385